REMARKS

Claims 1-27 are pending in this application. By this amendment, claims 5-20 are amended, new claims 21-27 are added. Claims 5-20 have been amended only to correct informalities, and not to overcome any of the asserted references. Reconsideration and withdrawal of the rejections in view of the foregoing amendments and the following remarks are respectfully requested.

Claims 12 and 20 stand rejected under 35 U.S.C. § 112, second paragraph. These claims have been amended, and are believed to comply with the requirements of Section 112. Withdrawal of this rejection is thus respectfully requested.

Claims 1, 2, 5, and 6 stand rejected under 35 U.S.C. § 102(e) over Davis et al. (U.S. Patent No. 6,141,784) (hereinafter Davis). This rejection is respectfully traversed.

Davis fails to disclose all of the claimed features, as required by Section 102. For example, Davis fails to disclose a data resending method, including sending to a sender a resend request message of a data, and packeting the requested data with the data to be currently sent and sending the resultant data packet, as recited in claim 1.

Additionally, Davis fails to disclose a video data sending and resending method between a coder and decoder, including storing video data in at least one buffer, packeting the video data from the at least one buffer and sending the resultant video data packet

from a sender to a receiver, sending a resend request message of a video data from the receiver to the sender if an error is detected, and packeting the requested video data with the video data to be currently sent from said at least one buffer and sending the resultant data packet to the receiver, as recited in claim 5.

Davis relates to a system and method for the retransmission of only a portion of a data packet that had originally been transmitted incorrectly. In order to prevent a delay in transmission when the portion of data needs to be retransmitted, Davis further discloses two independent data transmission channels. Thus, referring to Davis Figure 1, data links 15 and 17 are provided on different logical channels between a transmitting side 12 and a receiving side 14. Davis further discloses that by using the two separate logical channels, regular data transmissions may continue on the first data link while retransmission of data is processed on the second data link.

Further, referring to Davis Figure 3, a retransmission segment overlay packet format 60 is disclosed. The segment overlay packet is transmitted by a file transfer source in response to a receipt of an echo packet (Figure 2), and includes information necessary to replace only those segments of the packet which were in error. Thus, the erroneous data segments are transmitted over the second channel in a message that is separate from the regular data transmission.

For example, the data format 60 includes a plurality of data fields, including a standard opening flag field 62, a standard address field 64 for the address of the secondary logical channel 17, and a control field 65. Control field 65 includes fields 66 and 68. Field 66 includes the next sequence number N(S) in the sequence of numbers. Field 68 includes the sequence number N(R) which is associated with the echo packet that indicated a need to retransmit the segment overlay packet.

Next, fields 72, 74, and 76 make up the information field for the packet. Field 72 includes a bit-mapped mask that indicates which segments of the original data packet were in error and are being replaced by the segment overlay packet. Field 74 includes a control field CRC that provides additional protection of the integrity of the bit mask and control fields. Field 76 includes the actual data segments which are to be used as replacement segments for the original segments which were in error. Finally, field 78 includes the standard CRC associated and transmitted with the segment overlay packet and field 80 is a standard closing flag field.

Accordingly, no current data is transmitted in the retransmission segment overlay packet, and the retransmission segment overlay packet is transmitted on a second channel that is not used for regular data transmission. Thus, Davis fails to disclose packeting requested data to be currently sent, and sending the resultant data packet. Because Davis

fails to disclose all of the claimed features, it is respectfully submitted that claims 1 and 5 are allowable. Claim 2 depends from claim 1 and claim 6 depends from claim 5, and are allowable for at least the reasons discussed above with respect to claims 1 and 5. Withdrawal of this rejection is thus requested.

Claims 3, 4, 7-11, and 15 stand rejected under 35 U.S.C. § 103(a) over Davis. This rejection is respectfully traversed.

Davis fails to teach or suggest all of the claimed features, as required by Section 103. For example, claims 3 and 4 depend from claim 1, and claims 7-11 depend from claim 5. As discussed above, Davis fails to teach or suggest all of the features claimed in independent claims 1 and 5. For example, Davis teaches using two channels to transmit data. The first channel is for current data and the second channel is for re-transmitted data. Accordingly, it would not have been obvious to packet the requested data with data to be currently sent, and send the resultant data packet. Rather, Davis teaches keeping the re-transmission packets separate from the current data packets so that they can be sent over different channels. Accordingly, Claims 3, 4, and 7-11 are allowable for at least this reason, and withdrawal of the rejection is respectfully requested.

Moreover, with respect to claims 4, 7, and 8, the Patent Office admits that Davis fails to teach or suggest that the echo packets contain memory addresses and size

indicators corresponding to locations in memory, of variable size, at which the data to be re transmitted is stored, and that the data is stored in a circular dressing manner. The Patent Office, however, asserts that it would have been obvious to one of ordinary skill in the art to modify the teachings of Davis such that the echo packets would contain memory addresses and size indicators corresponding to locations in memory. Applicant respectfully disagrees.

For example, Davis teaches that a standard cyclic redundancy check character (CRC) is calculated for an entire packet, as well as for each segment of a packet. Each segment CRC is then stored in sequential order. Davis further teaches that the sequential ordering creates an association between a segment and its segment CRC. When the CRC is checked at the receiving end and found to be in error, the associated segment can be found based on a sequence number. Thus, as segments move through the memory in a FIFO manner (see, e.g., column 5, lines 61-65 and column 6, lines 20-29), the particular segment can be identified based on the sequence number. Additionally, the memory location may dynamically changed based on the FIFO memory management. Accordingly, it would not have been obvious to include memory addresses and size indicators corresponding to locations in memory.

Additionally, because Davis teaches storing segment CRCs in a sequential manner

and associating the segment CRCs with segments, there would have been no motivation to modify Davis to include a memory address for a range of data packets and buffer, for storing the video data and block units including variable length codes, according to a circular addressing manner. Hence, for at least all of these additional reasons, claims 4, 7, and 8 are allowable over Davis.

Next, with respect to claim 3 and 9, the Patent Office admits that Davis fails to teach or suggest that the values indicating the damaged portion indicates a range of DCT coefficients. Although not recited in the statement of rejection, the Patent Office appears to rely on Ran (U.S. Patent No. 5,768,533) to teach the features that are neither taught not suggested in Davis. To the extent that Ran is relied on, this rejection is respectfully traversed.

Ran relates to a communication system and protocol that uses retransmission techniques for video transmission on mobile/wireless channels. The system partitions frames of a moving image into frame segments, and combines a sequence of frame segments to form a sub-sequence of the moving image, which are treated as separate images and separately encoded and transmitted to a receiver. Further, Ran teaches that the receiver requests retransmission of data packets containing detectable errors, indicates in a status buffer which digital codes have been received and whether the digital codes are

intra or inter codes, and displays a frame only after all required data packets have been received without detectable errors.

Ran makes reference to discrete cosine transforms (DCT) only in the context of encoding and compressing video data. Thus, Ran teaches that when encoding a frame segment, video encoder 170 checks status counters 165 to determine if the frame segment should be intra-coded. Further, to intra-code a frame segment, video encoder 170 uses a still image encoding process to generate a digital code representing the frame segment. The video encoder 170 thus partitions the frame segment into macroblocks and compresses the macroblock. Ran further teaches that the compression can be done by using a DCT of the pixel values for a macroblock followed by quantization and run length coding typically provides a bit stream which requires less bandwidth to transmit than would all of the pixel values in the macroblock. Accordingly, it would not have been obvious to combine the compression techniques of Ran with the retransmission techniques of Davis to provide the addressing method of claims 3 and 9. Moreover, with respect to claim 9, the combination of Davis and Ran fails to teach or suggest that packeting the requested video data further comprises packeting the video data corresponding to the range of DCT coefficients with the video data to be currently sent. Finally, Ran fails to teach or suggest the features of independent claims 1 and 5. Thus, for all of these additionaly reasons,

claims 3 and 9 are allowable over the asserted references. Withdrawal of this rejection is thus respectfully requested.

Claim 11 is allowable for additional reasons as well. For example, as the Patent Office admits, Davis fails to teach or suggest that two buffers are used, wherein video data for current sending is stored in a first buffer, and video data previously sent is stored in a second buffer. The Patent Office further admits that Davis teaches that initial transmission and retransmission takes place on two independent links. Consequently, Davis fails to teach or suggest that adding the requested video data includes packaging the requested video data from the second buffer with the video data to be currently sent from the first buffer as recited in Claim 11. Rather, Davis sends these two data items separately.

With respect to claim 15, it is noted that claim 15 depends from independent claim 13. Davis fails to teach or suggest a video coding and decoding system including, inter alia, a data sending processor configured to packet requested video data with video data to be currently sent from at least one buffer and sending the resultant data packet to the receiver, as recited in independent claim 13. Accordingly, claim 15 is allowable for at least this reason.

Moreover, as the Patent Office admits, Davis fails to teach or suggest a video data coding processor storing compressed and video data. See Office action, page 6, item 7.

Consequently, claim 15 is allowable over Davis for this additional reason as well.

Additionally, as discussed above, Davis fails to teach or suggest that a resend request message includes values indicating a range of DCT coefficients corresponding to the damaged portion of the video data packet, as recited in claim 15. Moreover, Davis fails to teach or suggest that the data sending processor packets a data portion corresponding to the DCT coefficients with the video data to be currently sent, as further recited in claim 15. Consequently, for these additional reasons, a prima facie case of obviousness has not been made, and claim 15 is allowable over Davis.

Because a prima facie case of obviousness has not been made, it is respectfully submitted that claims 3, 4, 7-11, and 15 are allowable. Hence, it is requested that this rejection be withdrawn.

Claims 13, 14, and 16-19 stand rejected under 35 U.S.C. § 103(a) over Davis in view of Langmann (U.S. Patent No. 6,163,869). This rejection is respectfully traversed.

The asserted combination of references fails to establish a prima facie case of obviousness, as required by Section 103. For example, the combination of references fails to teach or suggest a video coding and decoding system including, inter alia, a video data coding processor storing a compressed video data in said at least one buffer, a data sending processor configured to packet the video data from the buffer and transmit the video data

packets to the receiver, and a data receiving processor configured to receive the video data packets and send a resending request message of a video data if an error is detected, wherein the data sending processor packets the requested video data with the video data to be currently sent from at least one buffer and sends the resultant data packet to the receiver, as recited in claim 13.

Davis is discussed above and fails to teach or suggest all of the claimed features. The combination of Davis and Langmann fails to teach or suggest the features of neither taught nor suggested by Davis.

Langmann relates to a method for re-sending incorrectly transmitted data, in which incorrectly transmitted data words are re-transmitted based on a time average. See column 1, lines 38-42. Langmann, however, fails to teach or suggest that a data sending processor is configured to packet requested video data with video data to be currently sent and send the resultant data packet to receiver. Consequently, the combination of Davis and Langmann fails to teach or suggest all of the claimed features.

Claims 14 and 16-19 depend from claim 13, and are allowable for at least the reasons discussed above with respect to claim 13. Because a prima facie case of obviousness has not been made, withdrawal of this rejection is thus respectfully requested.

New claims 21-27 have been added, and are believed to be in condition for

allowance. Prompt examination and allowance in due course are earnestly solicited.

CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, **Anthony H. Nourse**, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
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Amended Claims With Mark-ups to Show Changes Made

5. (Amended) A video data sending and resending method between a coder and decoder, comprising [the steps of]:

storing a video data in at least one buffer;

packeting the video data from said at least one buffer and sending the resultant video data packet to a receiver;

sending to a sender a resend request message of a video data if an error is detected in the sent data; and

packeting the requested video data with [the] video data to be currently sent from said at least one buffer and sending the resultant data packet to the receiver.

6. (Amended) [A] The method of claim 5, wherein the resend request message contains values [indicating] to indicate a damaged portion of the video data packet and wherein [in the step of packeting the requested video data, packeting] only the [damage] damaged portion of the requested video data is packeted with the video data to be currently sent.

7. (Amended) [A] The method of claim 5, wherein [the step of] storing the video data further comprises [the step of] storing the video data in block units including variable length codes, according to a circular addressing manner.

8. (Amended) [A] The method of claim 7, wherein the resending request message contains values indicating a memory address and range of block units corresponding to the damaged portion of the video data packet, and wherein [in the step of] packeting the requested video data[,] comprises packeting the range of block units corresponding to the damaged portion of the requested video data with the video data to be currently sent, based upon said values.

9. (Amended) [A] The method of claim 7, wherein the resending request message contains values indicating a range of DCT coefficients corresponding to the damaged portion of the video data packet, and wherein [in the step of] packeting the requested video data further comprises[,] packeting the video data corresponding to the range of DCT coefficients with the video data to be currently sent.

10. (Amended) [A] The method of claim 9, further comprising [the step of:] checking whether the block units of the received data packet corresponding to the

damaged portion of the requested video data equals the block units indicated in said values.

11. (Amended) [A] The method of claim 5, wherein [the step of] storing the video data further comprises [the steps of]:

storing video data for the current sending in a first buffer; and

storing a previously sent video data in a second buffer[; and],

wherein [in the step of] packeting the requested video data[,] further comprises packeting the requested video data from the second buffer with the video data to be currently sent from the first buffer.

12. (Amended) [A] The method of claim 5, wherein said at least one buffer [is a CONTRAXPAND™ buffer] is partitioned according to variable length codes of the video data.

13. (Amended) A video coding and decoding system comprising:

at least one buffer;

a video data coding processor storing a compressed video data in said at least one buffer;

a data sending processor configured to packet [packets] the video data from the at least one buffer and [transmits] transmit the video data packets to the receiver; and

a data receiving processor configured to receive [receives] the video data packets and [sending] send a resending request message of a video data if an error is detected[; and] ,wherein the data sending processor is further configured to packet [packets] the requested video data with [the] video data to be currently sent from said at least one buffer and [sending] send the resultant data packet to the receiver.

14. (Amended) [A]The system of claim 13, wherein the resend request message [contains] comprises values indicating a damaged portion of the video data packet and wherein the data sending processor packets only the [damage] damaged portion of the requested video data with the video data to be currently sent.

15. (Amended) [A]The system of claim 13, wherein the resent request message [contains] comprises values indicating a range of DCT coefficients corresponding to the damaged portion of the video data packet, and wherein the data sending processor packets a data portion corresponding to the DCT coefficients with the video data to be currently sent.

16. (Amended) [A] The system of claim 13, wherein said at least one buffer is partitioned according to variable-length codes and according to block units, and wherein the video data coding processor stores the video data in said at least one buffer in block units, according to a circular addressing manner.

17. (Amended) [A] The system of claim 16, wherein the resending request message contains values indicating a memory address and range of block units corresponding to the damaged portion of the video data packet, and wherein the data sending processor packets the range of block units corresponding to the damaged portion of the requested video data with the video data to be currently sent, based upon said values.

18. (Amended) [A] The system of claim 17, wherein the data receiving processor checks whether the block units of the received data packet corresponding to the damaged portion of the requested video data equals the block units indicated in said values.

19. (Amended) [A] The system of claim 13, further [including] comprising:

a first buffer configured to store [storing] video data for the current sending; and

a second buffer configured to store [storing] a previously sent video data[; and] , wherein the data sending processor packets the requested video data from the second buffer with the video data to be currently sent from the first buffer.

20. (Amended) [A] The method of claim 13, wherein said at least one buffer [is a CONTRAXPAND™ buffer] is partitioned according to variable length codes of the video data.